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10/086,652

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February 28, 2002

First Named Inventor

Ashurst, William R.

Art Unit

1762

Examiner Name

Markham, Wesley D.

Attorney Docket Number

02307V-121600US

ENCLOSURES (Check all that apply)

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| <input type="checkbox"/> Fee Transmittal Form | <input type="checkbox"/> Drawing(s) | <input type="checkbox"/> After Allowance Communication to Group |
| <input type="checkbox"/> Fee Attached | <input type="checkbox"/> Licensing-related Papers | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences |
| <input checked="" type="checkbox"/> Amendment/Reply | <input type="checkbox"/> Petition | <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) |
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| <input checked="" type="checkbox"/> Affidavits/declaration(s)-Supp. Dec. of William R. Ashurst under 37 CFR Sec. 1.131 (4 pgs.) | <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address | <input type="checkbox"/> Status Letter |
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name

Townsend and Townsend and Crew LLP

M. Henry Heines

Reg. No. 28,219

Signature

Date

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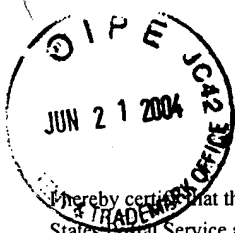
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**SUBMISSION UNDER 37 CFR 1.116
EXPEDITED PROCEDURE –
EXAMINING GROUP 1762**

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PATENT
Attorney Docket No.: 02307V-121600US
Client Ref. No.: B02-027-1

On 6/18/04

TOWNSEND and TOWNSEND and CREW LLP

By: [Signature]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

William R. ASHURST et al.

Application No.: 10/086,652

Filed: February 28, 2002

For: VAPOR DEPOSITION OF
DIHALODIALKYL SILANES

Customer No.: 20350

Confirmation No. 6884

Examiner: Markham, Wesley D.

Technology Center/Art Unit: 1762

**REQUEST FOR RECONSIDERATION
UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 1762**

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The attached SUPPLEMENTAL DECLARATION OF WILLIAM R. ASHURST UNDER 36 CFR §1.131 and the following remarks are offered in response to the Office Action mailed June 3, 2004.

The withdrawal of many of the rejections is noted with appreciation. Applicants respectfully submit, however, that the invention as claimed meets all statutory requirements for a patent, and Applicants therefore continue to traverse the remaining rejections. In view of the attached Supplemental Declaration and the following remarks, reconsideration of the application is respectfully requested.

Declaration and Supplemental Declaration of William R. Ashurst

Although it may have been less than clear from the remarks accompanying Amendment No. 1, the Declaration of William R. Ashurst of March 4, 2004, contains evidence of an actual reduction to practice rather than merely a conception, the reduction to practice occurring in the United States within the time period stated in the declaration. To clarify these events, Applicants submit herewith a Supplemental Declaration which states explicitly that the acts were actually performed and the product was verified, all having been done in the United States before the effective date of the Leung et al. patent. The Supplemental Declaration also includes a transcription of the entries in Exhibit B of the March 4 Declaration plus the Declarant's explanation of each of the entries. The transcription and the explanations explicitly show all of the materials used and the steps performed in applying a silane coating to the surface of a commercially obtained micromachine chip. The transcription and the explanations also show that the water contact angle of the applied coating was measured, and the resulting value confirms both the successful application of the coating and the water wettability of the coating.

The scope of the declaration is indeed commensurate with the scope of the claims within the standards established for Rule 131 declarations. The standard is quoted in the decision of the former Court of Customs and Patent Appeals in *In re Hostettler and Cox*, 148 USPQ 514 at page 516:

“Rule 131 requires applicant to make oath to facts showing a completion ‘of the invention.’ That requirement does not mean affiant must show a reduction to practice of every embodiment of the invention. Nor is that requirement coextensive with the amount of disclosure necessary to support a claim under 35 U.S.C. § 112. ... [O]ne of ordinary skill in the art would be satisfied from the facts shown in the affidavit that appellants had completed *the invention* as defined in the claims. ... Certainly appellants should not be required to submit facts under Rule 131 showing that they reduced to practice that which is obvious in addition to those facts offered as showing a completion of the invention, for the purpose of antedating a reference.” (Emphasis in original.)

The test of possession of an invention for purposes of antedating a reference is thus a test of obviousness, as Professor Chisum has confirmed:

“In order to avoid a reference a Rule 131 affiant need not necessarily show actual possession of either the entire invention as later claimed or such part of the

invention as the reference discloses. It is sufficient that he show possession of such as to make the entire invention or that part obvious to one with ordinary skill in the art. As the court noted in *In re Spiller* (1974), 'it is proper to consider the obviousness *of the differences* between what is shown and what is claimed because possession of what is shown carries with it possession of variations and adaptations which would, at the same time, be obvious to one skilled in the art.'" Chisum, D.S., *Chisum on Patents*, Vol. 1, § 3.08[1][b][ii], pp. 328-329 (2004).

In the present application, Applicants' claims recite a very narrow and well-defined genus of silanes, i.e., dihalodi(C₁-C₃ alkyl)silanes, which is well supported by dichlorodimethylsilane (DDMS). By accepted standards of obviousness, if a methyl group were in the prior art, the C₁-C₃ alkyl genus in its entirety would be obvious (all else being the same), and the same is true for chloro vs. halo. The chemical composition of the surface to which the coating is applied is not a defining feature of the invention, and the commercially obtained micromachine chip that Dr. Ashurst used in his experiment is a common and representative substrate for MEMS, NEMS, and microfluidic systems. Likewise, the pressures used in the experiments are centrally positioned within the range recited in claim 1, and it is well known that pressures can be varied in relation to exposure times and temperatures. Thus, the claimed subject matter as a whole would be obvious over the experiment reported in the two declarations if the experiment were prior art, and by the established standard this is sufficient for antedating the Leung et al. patent.

Leung et al. in Combination with Mayer et al.

As before, Applicants maintain that regardless of the antedating of Leung et al. by the declarations of Dr. Ashurst, the combination of Leung et al. and Mayer et al. does not render the present invention obvious. While the disclosures of both Leung et al. and Mayer et al. relate to chemical vapor deposition of alkylhalosilanes, the two contradict each other in terms of the water content of the atmosphere in which the deposition is performed. Leung et al. teach that water must be avoided since it interferes with the vapor-phase reactions (see column 6, lines 53-57 and the various other locations pointed out by Applicants in their remarks accompanying Amendment No. 1), while Mayer et al. expressly include water in the atmosphere with no mention of interference with the reaction. The combined teaching is therefore a contradiction,

which is not resolved by any of the teachings in these two references. The only plausible explanation for the contradiction lies in a comparison of the materials actually used. While Leung et al. do not cite a specific demonstration, Mayer et al. do, and the only silane that Mayer et al. cite is FOTS. This silane has 13 fluorine atoms and 3 chlorine atoms for a total of 16 halogen atoms per molecule, plus an eight-carbon alkyl chain. Halogen atoms can affect electronegativity and other characteristics of molecules in general, and long alkyl chains frequently offer characteristics significantly different from shorter chains. Comparing the FOTS of Mayer et al. with the silanes recited in Applicants' claims, the latter have only two halogen atoms per molecule and at most three carbons in any single alkyl chain. These are very large differences which necessarily affect the physical properties of these reagents and the manner in which these reagents can be used. By disclosing that a 16-halogen, 8-carbon-alkyl-chain silane can be successfully deposited with water vapor present, Mayer et al. do not suggest that the same or equivalent results can be obtained with a silane so far removed in molecular structure.

Is the disclosure of Mayer et al. an improvement over the disclosure of Leung et al., as the examiner suggests? Not when one realizes that Mayer et al. was submitted for publication in December of 1999, which is eighteen months before the May 2001 filing date of the Leung et al. patent. The Mayer et al. paper thus represents work performed and published earlier than Leung et al., and can hardly be termed an improvement. How would the two be interpreted if read together? One skilled in the art reading both references will logically conclude that the Leung et al. teaching of the deleterious effects of water apply to alkylhalosilanes in general and that the Mayer et al. paper is applicable only narrowly to a 16-halogen, 8-carbon-alkyl-chain silane. It is true that both the Mayer et al. silane and the small genus of silanes addressed by Applicants' invention are encompassed by the broad genus of Leung et al., but Applicant's portion and the Mayer et al. portion are far removed from each other, and the result that Applicants have demonstrated is contrary to the broad teaching of Leung et al. and not suggested by the limited teaching of Mayer et al.

Sato et al. and the Combination of Sato et al. and Leung et al.

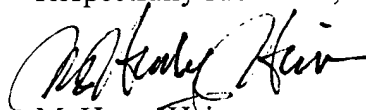
Applicants recognize that Sato et al. cite a range of pressures and exposure times. Nevertheless, the explicit statement that Sato et al. make is *disproved* by Applicants' experimental results. The statement, as the examiner has quoted, is "Experiments showed that what has been discussed above with reference to HMDS applies to other members of the group in substantially the same way." A comparison between the "way," i.e., the conditions, that Sato et al. report in their one detailed explanation of the process with the conditions, and the results that Applicants claim and demonstrate, shows that the statement is not true at all. Performing the deposition in air vs. a non-oxidizing atmosphere is not "substantially the same way." Nor are performing the deposition at atmospheric pressure and performing it at a pressure less than 100 torr "substantially the same way." And completing the deposition in twenty hours vs. ten minutes is a particularly strong indication that the two processes are not "substantially the same." No one skilled in the art, much less any industrial facility, would think that a process that is known to require a twenty-hour exposure time could be done in only ten minutes, or would be commercially viable against a competing process that could be completed in ten minutes.

Applicants recognize that Sato et al. is combined with Leung et al. for the rejection of certain claims, but once again, Applicants submit that Leung et al. is removed from consideration as prior art as the result of being antedated by the Ashurst declarations.

CONCLUSION

For the reasons set forth above as well as those previously asserted in Applicants' remarks accompanying Amendment No. 1, the invention as claimed is patentably distinct over the disclosures of Leung et al. and Mayer et al. in combination, the disclosures of Leung et al., Mayer et al., and Breen et al. in combination, the disclosure of Sato et al., and the disclosures of Sato et al. and Leung et al. in combination. For these reasons, reconsideration of the application and the issuance of a formal Notice of Allowance are respectfully requested. Should any matters remain that can be resolved by a conference with Applicants' attorney, the examiner is encouraged to telephone the undersigned at 415-576-0200.

Respectfully submitted,



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